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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/581,003

09/13/2007

Ted Maddess

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7250

32116

7590

11/22/2011

WOOD, PHILLIPS, KATZ, CLARK & MORTIMER  
500 W. MADISON STREET  
SUITE 3800  
CHICAGO, IL 60661

EXAMINER

JANG, CHRISTIAN YONGKYUN

ART UNIT

PAPER NUMBER

3735

MAIL DATE

DELIVERY MODE

11/22/2011

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/581,003	<b>Applicant(s)</b> MADDESS ET AL.	
	<b>Examiner</b> CHRISTIAN JANG	<b>Art Unit</b> 3735	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2011.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 5) ☒ Claim(s) 1-22 is/are pending in the application.
- 5a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 6) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 7) ☒ Claim(s) 1-22 is/are rejected.
- 8) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 9) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/01/11</u> .   | 6) <input type="checkbox"/> Other: ____.                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/27/11 has been entered.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. As to claims 1-22, it is unclear what the applicant means by a "spatially sparse stimuli". While there are examples of what is considered to be spatially sparse (e.g. [0014] - stimuli separated in space, [0026] and [0027] - various embodiments of what applicant considers to be spatially sparse), there is no actual limiting definition of at what point visual stimuli ceases to be spatially sparse.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-5, 7-11, 13-17, and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maddess et al. (US 2003/0163060) in view of Livingstone et al. (USP #5,474,081).

7. As to claims 1 and 11, Maddess teaches a method and corresponding apparatus for assessing a sensory nervous system of a subject (Abs), including: simultaneously presenting two or more parts of the sensory system with respective sequences of stimuli ([0010]) using a stimulator ([0030]), varying each sequence over time between a null stimulus and one or more less frequent non-null stimuli ([0011]) using a processor ([0031]), controlling the variation of each sequence so that neighboring parts of the sensory system are less likely to receive simultaneous non-null stimuli ([0011]), measuring one or more simultaneous responses by the subject to the sequences of stimuli ([0012]) using a monitor ([0031]), and determining weight functions from the response for assessment of the sensory system ([0012]). Maddess fails to teach the use of spatially sparse stimuli. However, Livingstone teaches the use of spatially sparse stimulus (col. 7 line 57 to col. 8 line 13), and further teaches the monitoring of each of the responses (col. 2 lines 57-63) to obtain characterizations of neurological function via evoked potential measurements (col. 2 lines 57-63). As such, it would have been obvious to one of ordinary skill in the art to modify the assessment of a sensory nervous system taught by Maddess with the use of a spatially sparse stimuli as taught by

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Livingstone to prevent masking of signals by clutter and noise with identical or close proximity of stimuli to obtain clear indications on individual brain function.

8. As to claims 2 and 14, Maddess teaches the non-null stimuli appear in each sequence at a rate of about 0.25 to 25 per second ([0028]).

9. As to claims 3 and 15, Maddess teaches the possibility of neighboring parts in the sensory system having simultaneous non-null stimuli is zero (Fig. 3; [0078]).

10. As to claims 4 and 16, Maddess teaches the sensory system is a visual system and multiple parts of the retina are presented with stimuli ([0003]). Livingstone teaches a spatially sparse stimulus.

11. As to claims 5 and 17, Maddess teaches the sensory system is a visual system and the sequences include either binocular or dichoptic stimuli ([0072]).

12. As to claims 7 and 19, Maddess teaches the parts of the sensory system are in the retina, the ears, the skin, or in the brain of the subject ([0014]; [0056]).

13. As to claims 8 and 20, Maddess teaches the stimuli are selected from a range of signals such as light or sound frequency, or pressure ([0014]; [0076]).

14. As to claims 9 and 21, Maddess teaches the parts of the sensory system receiving stimuli form a region divided into classes and only one of the classes has a non-zero probability of receiving stimuli at any time ([0022], claim 1). Livingstone teaches a spatially sparse stimulus.

15. As to claims 10 and 22, Maddess teaches the responses are nonlinear and the weight functions are Wiener or Volterra kernels (claim 21).

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16. As to claim 13, Maddess teaches the monitor measures response to the stimuli by way of electrode potentials on the head of the subject ([0002]).

17. Claims 6 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maddess et al. (US 2003/0163060) in view of Livingstone et al. (USP #5,474,081) as applied to claims 1 and 11 above, and further in view of Thornton (USP #6,743,183).

18. As to claims 6 and 18, the combined teachings of Maddess and Livingstone fail to teach the sensory system is an aural or tactile system and the ears or skin are presented with spatially sparse stimuli. Maddess does teach the sensory system is an aural or tactile system and the ears or skin are presented with stimuli ([0014]). Thornton teaches the use of a spatially sparse auditory stimulus to evoke an electrophysiological response and to make an assessment based on the measurement (col.4, lines 24-37; col. 7 lines 32-40). As such, it would have been obvious to one of ordinary skill in the art to modify the assessment of a sensory nervous system taught by Maddess, incorporating the use of a spatially sparse stimuli as taught by Livingstone, with the use of spatially sparse auditory stimuli as taught by Thornton in order to utilize an audio stimuli versus a visual stimuli to obtain indicative measurements of the user's brain function which may give additional and/or other diagnostic information of the user's brain function.

### ***Response to Arguments***

19. Applicant's arguments filed August 6<sup>th</sup>, 2010 have been fully considered but they are not persuasive.

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20. As to claims 1 and 11, applicant has first presented that the term "spatially sparse" stimulus ensemble is one where few or no stimuli in the ensemble are co-presented with their spatial neighbors and argues that the stimuli taught of Livingstone differs from this definition of a spatially sparse stimuli. However, the specification fails to provide this explicit definition of the term, nor are the limitations found in the claim language. In addition, a definition of having few or no stimuli co-presented with their special neighbors interpreted in the broadest reasonable sense would not preclude the teachings of Livingstone from being interpreted as being spatially sparse. For example, with the amount of the null stimuli presented in Livingstone's checkerboard/columns, the amount of stimuli can be considered spatially sparse, especially including the vast area of null stimuli surrounding the checkerboard pattern.

21. As the newly added 112 2nd para rejection shows, there is no limiting definition for what a "spatially sparse stimuli" consists of. And while applicant's lengthy argument of why Livingstone does not teach spatially sparse stimuli has been considered, the applicant has still failed to demonstrate what the metes and bounds of the phrase is. As such, any stimuli that have any sort of distance between the stimuli or contain null-stimuli can be considered spatially sparse. If applicant is unable to provide an explicit definition for "spatially sparse stimuli" within the original disclosure or to find an established art-specific definition for the phrase, the applicant is advised to incorporate specific embodiments of spatially sparse stimuli that have written description support within the original disclosure.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTIAN JANG whose telephone number is (571)270-3820. The examiner can normally be reached on Mon-Friday (9-5).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor can be reached on 571-272-4730. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CJ  
/C. J./  
Examiner, Art Unit 3735  
11/17/11

/Patricia C. Mallari/  
Primary Examiner, Art Unit 3735